

IV.—Notes on the Nidification of some Indian Birds not mentioned in Hume's 'Nests and Eggs.'—Part I. By E. C. STUART BAKER, F.Z.S.

1. DENDROCITTA FRONTALIS. (*Oates*, Fauna of British India, Birds, i. p. 33.)

This handsome Magpie breeds freely to the east of North Cachar on all ranges over 4000 feet high. The nest is much like that of *D. himalayensis*, but is, on an average, somewhat smaller. It is made of fine twigs and the stems of creepers and weeds, the last less invariably used than the two former. In nine cases out of ten there is practically no lining, but in two nests I have seen a scanty amount of mithna and goat's-hair placed at the very bottom, and in a few others I have found a sort of rough lining of coarse fern-roots, the softer stems of green weeds, or the finer roots of bamboos. Always, however, the lining, if existing at all, is coarse and by no means abundant. The nest is in shape a shallow cup, rather flimsy and transparent, but more so in appearance than in reality, for, though one can always see through it, the materials are well intertwined and stand a great deal of rough handling before coming apart. The size of the nest ranges from under 5" to 7" in diameter, and the depth from about 2" to 3".5 or rather more; nests measuring over 6".5 are rare, and the average is only about 6", outer diameter; the inner cup averages about 5" by 1".

The nest is seldom built at any great height from the ground, generally below six feet, and often within two or three. It is placed in the fork of a bush, a small sapling, or even in a stout weed, and the situation preferred is one in scanty forest with a thin undergrowth of weeds and scraggy bushes. In dense evergreen forest I have never found the nest, though I have seen the birds, but I have taken two or three in the outskirts of evergreen forest where the trees were few and far between, and the principal growth consisted of tall bushes and thick, low lime-bushes. The eggs can nearly all be matched with others, either of *D. rufa* or *D. himalayensis*, but, taking a series of them, they present a much richer

appearance. I have met with none similar to the commonest type of egg of *D. rufa* (in which the ground is a pale salmon-buff colour, profusely marked with reddish), and, on the other hand, a great many eggs are of a far more decidedly green tinge, both as regards ground-colour and markings, than are *any* of the eggs of that bird, or one in fifty of *D. himalayensis*.

Beyond saying that in typical eggs of *D. frontalis* they are more numerous, there is nothing to add as regards the character and distribution of the markings to what has already been said of the eggs of *D. rufa* by Oates, and in texture and shape they also very closely resemble these eggs, though they average somewhat smaller and broader.

Thirty-six eggs average 1''·08 by 0''·83, and in length range between 0''·98 and 1''·21 and in breadth between 0''·80 and 0''·87.

They breed in Cachar from the middle of April up to the end of July.

2. PARADOXORNIS FLAVIROSTRIS. (*Oates*, op. cit. i. p. 62.)

The majority of the nests I have found of this Crow-Tit have been very deep, compact, well-made cups, outwardly composed of shreds of grass-blades and very fine strips of the stems, equally fine and narrow pieces of bamboo-leaves, and *very, very* rarely one or two exceedingly fine pliant twigs, matching in colour the yellow or reddish yellow of the other materials. The lining is, as a rule, formed of even finer scraps torn from the inner bark of ekra-stems, but on one occasion I found a nest lined with buffalo-hair; this, however, must have been a very abnormal nest, and it is unlikely I shall ever see such another.

Some nests, while resembling the above in every other particular, differ only in shape, being broad shallow cups. The difference cannot be better shown than by giving the measurements of two nests, one of each type:—1st, outer diameter 3''·7, inner diameter 2''·6, outer depth 3''·2, inner depth 2''·4; 2nd nest, outer diameter 4''·1, inner diameter 3''·2, outer depth 2'', inner depth 1''·4.

Both the above-mentioned nests are slightly larger than most, but the proportions are all equally above the average. Gammie's description of the nest of *Scæorhynchus ruficeps*, in which he says, "The material used is particularly clean and new-looking, and has not the second-hand appearance of so much of the building-stuffs of many birds," is also very applicable to this bird's nest, and, indeed, all the nests of this bird, *Scæorhynchus ruficeps*, and *S. gularis* seem to be of the same style and character. I must now have taken over a dozen nests of each kind.

Fully three nests out of four are built in bamboo-clumps at heights varying from four to eight feet, and generally in some thick cluster of twigs well on the outside of the clumps. Less often it may be found on a small sapling, or even on a dead branch of some small tree, but wherever it is there appears to be not the slightest attempt by the bird at concealment, and the nest is often very conspicuous from some distance. It is never, I believe, built in thick jungle, but generally in thin scrub or bamboo-jungle, more seldom in thin tree-forest.

One clutch of three eggs are in colour a very pale greenish white, so faintly tinged with green that they *appear* white unless placed against some egg or other article which is really so. The markings consist of spots, varying in size from small specks or freckles to large irregular blotches, of a pale olive or umber-brown, with a few secondary small dots of pale lavender. These last are principally confined to a ring about the larger end, but the others are irregularly scattered over the whole egg. In the centre of some of the larger pale patches, and also elsewhere, are a few very fine twisted and tangled lines of dark amber.

Other eggs vary only in having the ground-colour a brownish or yellowish white. One rather abnormal clutch of two eggs are white, with a very few faint specks of pinkish brown disposed in an indistinct ring round the extremity of the larger half.

In shape they are regular ovals, though not quite so regular as those of the genus *Scæorhynchus*. The texture is fairly

close, but rather chalky, and very fragile for the size of the egg; the surface in one or two of the darkest eggs only exhibits a very faint gloss.

Three is the usual number of eggs laid, sometimes four, and often but two, for thrice I have taken this number hard-set. They seem to breed principally at the end of May and the beginning of June.

3. *SUTHORA ATRISUPERCILIARIS*. (*Oates*, op. cit. i. p. 67.)

I have taken but one nest of this bird, which was found on the 7th of July, 1893. It was first found by a Naga, who was searching for nests for me, and who, in accordance with the instructions he had received, set some nooses about the the nest to trap the parents, and then came to take me to it. On my arrival I found the female caught, and before taking the nest I waited some time to see whether the male also would come, but as he failed to put in an appearance I took the nest and the single egg it contained.

Outwardly the nest is composed of fine shreds of grass and whitish grass-bark; within this are a considerable number of pieces, rather broad, of bamboo-leaves; and, finally, it is lined with a small amount of dark-coloured grass-stems, the dark outer bark of some weed, and two or three tiny scraps of tree-bark. The colour of the exterior is yellowish white, that of the interior darker and browner. The general character of the nest is typical of the subfamily, but it is far less neat and less compact than that of either *Paradoxornis* or *Scæorhynchus*. In shape it is a deep cup, measuring outwardly about 3"·1 by 2"·45, and inwardly 1"·80 by 1"·7. It was placed in a thick bamboo-clump, in a cluster of twigs growing from a bamboo quite on the outside of the clump, and was rather over six feet from the ground. The clump in which it was built was one of five or six which were growing on a steep hill-side, scattered about over a large extent of sun-grass, which grew about three to four feet high. The elevation of the mountain where it was taken is over 4000 feet.

The egg is not at all what one would have expected to

find laid by any bird of this subfamily, at all events judging from those of its nearest relations, the eggs of which are known. In colour it is a uniform pale bright blue, approximating most closely in general tint to the eggs of *Trochalopteron lineatum*, but paler and brighter. The texture is smooth and close, but, like that of *Paradoxornis*, slightly soft or chalky. It has a decided, though slight, gloss. The shape is a regular oval, very little compressed towards the smaller end, which is but insignificantly smaller than the other. It measures $0''\cdot77 \times 0''\cdot6$.

Some three years ago a Naga brought a nest and egg of this bird to me, but I disbelieved him when he told me to what bird it belonged, and threw away the nest without taking any notes. The egg I kept, and, comparing it now with the one I know to be authentic, I can see practically no difference beyond the fact that it is much smaller, measuring $0''\cdot73$ by $0''\cdot53$, and is a longer oval; the colour, texture, &c. are the same, and I fancy it is really an egg of this *Suthora*.

4. DRYONASTES SANNIO. (*Outes*, op. cit. i. p. 76.)

I have only found this bird breeding in one place in North Cachar, the Laising Valley, which is over 2500 feet above the plains. Bordering the stream, which runs through it, on either side is evergreen forest, the ground rocky, but here and there rather densely covered with bush-jungle and with a carpet of soft moss, wild caladiums, maiden-hair and other ferns; it was in such a place as this I got my first nest. In general appearance it was like the nests of *D. ruficollis*, but was larger and more massive in proportion. Outwardly it measured fully $6''\cdot6$ in diameter, and the external depth was about $4''$, the measurements inside being about $3''\cdot5$ by $2''\cdot5$. All the materials used were very dark, and consisted of dead, almost rotten, sun-grass, fern, and moss-roots, a few dead bamboo-leaves, and one or two other leaves, all bound together with soft weed-stems and a few tendrils, and lined with coarse fern-roots and fern-stems. Other nests taken since resemble this one very closely, and differ from it merely in size, the diameter outside varying between $5''\cdot5$ and $7''$,

and the materials consisting sometimes of certain of the articles mentioned above, sometimes of others of them, but the lining of all I have seen has been the same. In nearly all nests, also, the preponderating material used is dead grass.

The bush selected as a site may be a lofty one or a low bushy one; once I have taken the nest from a small sapling about twenty feet from the ground. Three appears to be the full complement of eggs laid, and whilst I have never seen four in a clutch, I have several times seen two eggs much incubated. They are, of course, blue in colour, but they are of a beautiful satiny texture, not easy to describe. The surface is very smooth, and feels to the touch the same as do eggs of *Batrachostomus* and of the Capitonidæ. Of the Crateropodinae, the eggs which approach nearest are those of *Stactocichla merulina* and *Trochalopteryx virgatum*, and, to a less extent, *T. lineatum*, but as neither of the former birds' eggs are at all known, I believe, except to myself, it is not of much use to cite them for comparison. The shade of blue or blue-green is much the same as in the egg of *D. cærulatus*, but shows rather more gloss, though never to anything like the extent to be seen in the eggs of *D. ruficollis*. In shape they are rather long, blunt ovals, somewhat compressed and drawn out towards the smaller end.

Twenty-four eggs average 1".19 by 0".79. The longest is 1".26, and the broadest 0".83, the shortest and narrowest being 1".12 and 0".70 respectively.

5. GARRULAX GULARIS. (*Oates*, op. cit. i. p. 81.)

This handsome but rare Laughing Thrush is found in some numbers to the east and north-east of the Cachar district, breeding from the end of April up to the middle of July, April and May being the months in which most nests may be found.

The nest is like that of *Garrulax moniliger* and *G. pectoralis*, but a larger variety of material is used, and, I think, taking a considerable series, it is also better built—both more compact and better finished off at the edges, &c. In

most nests the major portion of the material used will be found to consist of bamboo-leaves, other articles consisting of dead leaves, moss, and fern-roots, sometimes coarse bamboo-roots and stems of weeds, and, almost always, a great number of tendrils. The lining consists almost invariably of coarse moss- and fern-roots, mixed with leaf-stems and a few stalks of weed. I do not remember having seen any nest which did not contain a certain number of tendrils, and in some few cases these form the bulk of the nest, even the lining containing a number of fine and soft ones. The largest nest I have recorded is one which was found by a roadside in a mass of creepers, half resting on, or against, a dead stump, and within a foot of the ground. This nest was fully 7''·5 across, and the outer wall about 4''·5 deep, but the inner wall, *i. e.* that against the stump, was about 7'', it being built up higher and slightly over the internal cup, though by no means forming a domed, or even semi-domed, nest. The average size of the nest is about 6'' by 4'' externally, and some 4'' by 2'' internally.

The situation in which the nests are placed varies considerably; I have taken them from tall saplings fully twenty feet from the ground, and again have found others within a few inches of it. Perhaps more nests are found below than above four feet from the ground, heavy masses of raspberry-brambles, ferns, and other low plants forming a very favourite position for the bird as a nesting-site. Most nests are placed well inside heavy jungle or forest, but the nest I have described above as being unusually large was taken from beside a track or pathway frequently used, though the nest was so well hidden as not to be found without a careful search. Two is the normal number of eggs laid, three seldom, four never. The first eggs I obtained of this bird were pure white, and were brought to me by a Naga, together with the nest and the female; the second clutch I obtained were of the beautiful pale blue colour seen in the eggs of *Dryonastes ruficollis*. I therefore put down one of these clutches as being false, but which I could not tell; further experience, however, has proved to me that these birds lay eggs which

vary from pure white to the blue already mentioned: Intermediate coloured eggs of a *very* faint blue are rare, and most eggs are either absolutely pure white or else of a decided, though pale, blue. The surface is very fine and smooth, though not so close and hard as in most *Garrulax* eggs, being in this respect more of the texture of the eggs of the genus *Ianthocincla* or *Pomatorhinus*. In shape they are long, somewhat pointed, ovals, varying from 1''·04 to 1''·22 in length, and in breadth between 0''·75 and 0''·85, the average of 32 eggs being 1''·15 by 0''·80 full.

6. TROCHALOPTERUM VIRGATUM. (*Oates*, op. cit. i. p. 100.)

I have found this Laughing Thrush breeding only on the higher ranges close to Maupur. The nest is much like that of *T. lineatum*, but differs in being more compact and somewhat smaller. In shape the nests are deep, stoutly-built cups, the principal articles used in their construction being tendrils, dead leaves, grasses, roots, and fine bents, sometimes a few bamboo-leaves and fern-fronds, and generally a good deal of moss. The nests vary a good deal in shape, material, and other details. One, found in a thick growth of weeds and brambles, resting almost, if not quite, on the ground, had the main structure made of bamboo and other dead leaves, intermixed with moss and tendrils, and also bound outside with the latter and a few weeds, the moss projecting through, and so causing the general colour of the nest to be a dull brownish green. The lining was entirely of roots and fern-stems. This was a far deeper nest than most, the cavity being about 3''·2 in diameter and 3''·5 in depth; the outer dimensions were very large, owing to the straggling pieces of moss and bamboo-leaves. Another nest, taken from the fork of a small sapling, was more compact and neat, the external dimensions being 6'' by 4'', and the internal about 4'' by 2''·8. The materials used were much the same as in the last nest, with the exception that there were no bamboo-leaves, and, on the other hand, tendrils were even more numerous. Taking into consideration the whole of the twenty nests or so that I have seen, I should say

that, typically, the nest of the bird is rather neater and deeper than that of *T. lineatum*, as described by Hume ('Nests and Eggs,' vol. i. p. 65), and that another distinctive feature is the invariable use of tendrils in its construction, these being sometimes very numerous, at other times but few in number, yet always present to a greater or less extent.

This bird breeds principally in May, a few late in April, and I have taken one nest and eggs in the middle of July.

The normal number of eggs laid is three, sometimes but two, never, so far as I know, four. I have already mentioned that the texture very closely resembles that of the eggs of *Dryonastes sennio*, and there is therefore nothing to add beyond the fact that they have a slight gloss, though rather less than is shown by the few eggs I have seen of *T. lineatum*; in colour also they are somewhat paler than these eggs, and amongst the 23 eggs I have taken there has been no appreciable difference in the shade of colouring or of the shape. This latter is a rather broad oval, but slightly compressed towards the smaller end, which is very blunt.

Twenty-three eggs average $1'' \times 0''\cdot73$, the greatest length being $1''\cdot08$ and the greatest breadth $0''\cdot76$, the least being respectively $0''\cdot98$ and $0''\cdot78$. The average of fifty-eight eggs of *T. lineatum* is given by Hume as being $1''\cdot01$ by $0''\cdot73$, which is very close to the average of my eggs of *T. virgatum*, though the extremes of length and breadth given by him are far wider apart than are mine.

7. GRAMMATOPTILA AUSTENI. (*Oates*, op. cit. i. p. 104.)

I have only one very rough note on the nidification of this bird, which is as follows:—"Nest exactly like that described by Gammie as belonging to *G. striata* (Hume, 'Nests and Eggs,' vol. i. p. 67), but measuring an inch broader, that is to say, externally $8''\cdot5$ by about $6''$, and internally about $5''$ by $2''\cdot3$."

The nest was placed in a thick bush at a height of less than five feet from the ground. The eggs have been broken by accident, so that I cannot describe them beyond saying that they were just like some eggs of *G. striata* given me by

Mr. H. E. Barnes. They measured $1''\cdot3 \times 0''\cdot93$, $1''\cdot3 \times 0''\cdot92$, and $1''\cdot26 \times 0''\cdot87$.

8. STACTOCICHLA MERULINA. (*Oates*, op. cit. i. p. 104.)

Breeds all over the east of North Cachar and in Manipur above 3000 feet, keeping principally, however, to the Laising Valley, where it is very abundant. It builds chiefly in evergreen-forest, but in 1893 I took several nests from bamboo-jungle. In the former, the evergreen-forest, the nest is generally placed in some thick shrub, either in amongst the lower twigs or branches or right down amongst the roots; in the latter it is usually built low down in some thick bamboo-clump, often well in the centre of it, sometimes on the outside, at other times almost on the ground amongst the thick clusters of small twigs and roots which spring thence. When built in the first-described sort of position the materials consist of roots, grass, bamboo and other leaves, more or less mixed with moss and bracken-fronds, and the lining is made of fern- and moss-roots, occasionally of fine creeper-stems and tendrils or very fine pliant twigs. These nests are somewhat bulky shallow cups, originally rather well built and fairly compact, but soon becoming damp and rotten from the constant dampness of these forests, so that they thus bear little handling. Nests built in bamboo-jungle differ considerably from these, and a description of the last one found would do for all or any of the others which I have taken. This is a compactly-made cup, measuring externally $4''\cdot6$ by $3''\cdot2$, and internally $2''\cdot9$ by $1''\cdot3$. The material used for the foundation and the outer framework consists entirely of bamboo-leaves, these being bound together by a few soft weed-stems and fine roots; inside this there are numerous coarse fern-roots and stringy, tough bamboo-roots, all thoroughly intertwined together; inside this, again, is the true lining, a quantity of fern- and moss-roots, mostly of the finer sort, but mixed with a few stouter ones. The base of the nest is very thick and compact, and thence the walls grow gradually thinner towards the top, where they are only some $2''$ to $4''$ thick, though straggling leaves, loosely fixed in weeds and roots, make the total diameter a good deal more

than it would otherwise be. I have never seen four eggs of this bird in any nest, and I think two eggs or young are more often met with than three.

In colour these eggs are a very beautiful green-blue, similar to those of *Garrulax moniliger*, but brighter and clearer, and with a totally different texture, which is of the same satiny description as the eggs of *Trochalopteryx virgatum*. In shape they are generally rather broad ovals, but one end is always considerably smaller than the other, usually blunt, though sometimes rather pointed, and abnormal eggs tend to have *both* ends somewhat pointed. The shell is rather more fragile than that of most of the Crateropodinae. Forty-five eggs average not quite 1''·14 by 0''·82. Thirty eggs taken previously to 1893 average only 1''·14 by 0''·81. Fifteen eggs taken in 1893 average 1''·18 × 0''·83. The small average for the first thirty eggs is due in great measure to four abnormally small eggs, which average only 0''·99 × 0''·76, the next smallest egg I possess being 1''·12 × 0''·79. The longest egg in my collection is 1''·26, and the broadest 0''·86.

These birds breed throughout June and July, the 24th of the latter month being the latest date on which I have taken eggs.

The bird is a close sitter, and allows a person to approach very close to its nest before it leaves it and hides in the adjoining cover.

9. POMATORHINUS PHAYRII. (*Oates*, op. cit. i. p. 121.)

The nest of this bird differs from that of *P. schisticeps* merely in being somewhat more compactly put together. It is made, as are all Scimitar-Babblers' nests, principally of bamboo-leaves, more or less mixed with fern- and bracken-fronds and grass, and lined with the latter. I should, however, remark that the typical nest of *P. schisticeps* is globular or semiglobular, and *not* a shallow saucer like those described by Hume ('Nests and Eggs,' vol. i. p. 81). I must now have taken fully 200 nests of the *Pomatorhini*, and fully three quarters of these have been completely or nearly globular. This Scimitar-Babbler, unlike most of its genus,

does *not* place its nest either on or very close to the ground, at all events not often. Many are placed four to five feet up in thick bushes, bamboo-clumps, or other similar suitable places. One I took from a bush was over seven feet from the ground, and two or three others taken from bamboo-clumps were quite as high up.

Three is the most usual complement of eggs, four being seldom laid; they are, of course, pure white, and in texture like others of the genus, and they are fairly glossy. Typically they are blunt elongated ovals, but short ovals occur. The only fifteen eggs I have measured average 1''·15 by 0''·716.

These birds seem to breed only at heights over 3000 feet, and are very early breeders; all my eggs have been taken on or before the 26th May, with the exception of one clutch taken on the 12th July. During this month, however, I found nearly all the young fully fledged, and the three eggs I took were probably a second brood.

The nest is made in bamboo-jungle, bush-scrub, the borders of cultivation, and on the *outskirts* of forests; seldom, I believe, any great distance in their interior.

10. POMATORHINUS MACCLELLANDI. (*Oates*, op. cit. i. p. 125.)

This bird is not uncommon on the eastern ranges of North Cachar, where I have often found its nest. This does not differ at all from that of *P. erythrogenys*, though, probably from being the most handy materials, it is nearly always built mainly of bamboo-leaves and coarse grasses; other materials, such as ferns, roots, &c., being less easy to obtain, are not used to so great an extent. The eggs, three or four in number, are not, I think, typically so long or drawn out as the majority of Pomatorhine eggs. The fourteen I have taken measure 1''·09 by 0''·76, and I think, in addition to being shorter than most eggs of the genus, the shell is perhaps rather stronger and also slightly less glossy. They breed in much the same sort of places as *P. phayrii*, but their nests are always placed on, or almost on, the ground. The favourite place, undoubtedly, seems to be the base of

some bamboo-clump, where it is half buried amongst the fallen spathes and leaves; it also prefers to place its nest on sloping ground, and not on ground at all level.

I have taken no nest later than May, and even more eggs are laid in April than in that month, some few being laid in March.

11. *GAMPSORHYNCHUS RUFULUS*. (*Oates*, op. cit. i. p. 135)

I have but one note on the nidification of this bird. This refers to a nest found about two miles from Gungong, taken from a bamboo-clump growing beside a road, at about six feet from the ground. It was a massive semiglobular affair, much like many nests of the *Pomatorhini*, made of bamboo-leaves and lined with fern-roots, narrow strips of ekra-bark, and grass. It contained four young, and the egg of this bird I have never yet seen. The Cacharis inform me that it more nearly approximates to the eggs of the genus *Trochalopterum* (the marked type) than any of this subfamily, but of course not much reliance can be placed on what the natives assert.

This Babbler sometimes breeds in immature plumage, as the male bird of this nest was in the semirufous stage, and I do not think the complete adult stage is always attained before the second autumn.

12. *PELLORNEUM PALUSTRE*. (*Oates*, op. cit. i. p. 143.)

I have found this bird breeding in the extensive grasslands to the north of the subdivision. The nest cannot be distinguished from those of *P. ruficeps* and *P. mandellii*, but it is more often placed on grass-land than in any other situation, seldom, if ever, in the bamboo- and bush-jungle so much affected by those birds. The eggs only differ in being somewhat smaller, averaging about 0''·87 by 0''·64.

13. *PELLORNEUM IGNOTUM*. (*Oates*, op. cit. i. p. 144.)

This is one of the most common birds to the north-east and east of the North Cachar Hills, breeding everywhere above 3000 feet in great numbers. The nest is of the same character as that of *P. mandellii*, i. e. a rather massive struc-

ture, composed principally of bamboo-leaves and grasses, and lined either with grass or, very rarely, with bamboo- and fern-roots. It is decidedly a neater nest than that built by any other *Pellorneum*, and is also rather more compact and well put together. I have seen one or two nests built of very fine shreds of bamboo-grass exceedingly well intertwined and neatly finished off; so much so, indeed, that at first sight I have mistaken them for the nests of *Uroloncha acuticauda*. In most nests the entrance is rather close to the top, about one inch to two inches below the roof; in others it is somewhere near the middle; whilst in a few it is quite close to the bottom, merely sufficiently removed from it to prevent the loss of the contents. The situation selected for the nest is not, as is the almost invariable rule with other birds of this genus, one on the ground, but generally in some thick bamboo-clump or else in a thick tangle of plants and creepers. The favourite place is the former, undoubtedly; the position chosen being somewhere between two and four feet from the ground, seldom more and seldom less, in a thick cluster of twigs or amongst the clump of bamboo itself. In number the eggs are three or four, most commonly the former, and I have on two occasions met with only two eggs incubated.

The most common type has the ground-colour a rather bright, decided pink, profusely covered over the whole surface with rather dark brownish-red speckles and dots, which frequently form a well-defined ring about the larger end, sometimes a blurred cap, but this is never so distinctly defined as is the ring.

Some eggs are much paler, not unlike those of *Iole icterica*, but more blurred and less boldly marked; others, again, have the ground-colour almost white, so that the markings show up far more than they would otherwise do. In some few eggs the markings are confined to the larger end, forming there a ring or cap.

One clutch in my collection has the whole of the markings blurred and indistinct, running one into another and merging into the ground-colour. The shape of the egg is wonderfully

constant, abnormal eggs not existing, so far as my experience goes. They are regular, rather broad ovals, very slightly, if at all, compressed towards either end, and though in a few they are slightly lengthened, still they are always blunt. The two most lengthened clutches I have are also the only two in which the markings are *entirely* confined to the larger end, but though the markings might be termed abnormal, at least in their distribution, the eggs are not sufficiently long or pointed in shape to be so called. The shell, though thin, and therefore fragile, is close and firm in texture, showing a fair amount of gloss.

Ninety-two eggs vary between 0''·72 and 0''·90 in length, and in breadth only between 0''·57 and 0''·62; the average of the same number being 0''·78 by 0''·60. It is curious that, whilst the variations in length cover 0''·18, the variations in extreme breadth should be only 0''·5. Of the total 92 eggs measured, only six exceed 0''·84, and only seven were less than 0''·75 in length, so that, omitting these 13 eggs, the remaining 79 varied but 0''·9 in their extremes of length.

The earliest date I have recorded on which I have taken eggs is the 20th of April, 1893, and the latest is the 29th of July of the same year.

14. DRYMOCATAPHUS TICKELLI. (*Outes*, op. cit. i. p. 146.)

The eggs of this bird are recorded in Hume's 'Nests and Eggs,' but as I have now no hesitation in stating that Bingham must have been in error when he assigned the eggs found by him to this species, I include it in the list I am now preparing.

On some fifteen occasions I have taken the nest, obtaining either the male or female bird at the same time; a dozen times I have had it trapped, and thrice I have shot one either on the nest or close to it. This, the nest, is, as might be expected, much like that of a *Pellorneum*, being made of bamboo-leaves and soft sun-grass, but having a more or less large amount of dead leaves, fern-fronds, and other similar material woven in with the others. In shape it is more

often a deep cup, or a cup with one side prolonged and bent over, than is the nest of any *Pellorneum*, though cup-shaped ones are not rare even amongst birds of that genus. Perhaps also, on the whole, it is more compact than that of a *Pellorneum*, the materials being more welded together, damper, and heavier. Two nests out of three will be taken from off the ground itself, but others are placed low down in bamboo-clumps, thick bushes, or other similar situations. One I once found was in a damp mass of weeds, caladiums, and creeping-raspberries, placed about 18 inches from the ground, and, whilst well hidden from view on three sides, was plainly visible from the fourth side, where a track ran down the steep hill, leading from a camping-ground to a small stream. The bird, though so shy, is a close sitter, and does not leave the nest until the finder has come very close; but when it does leave it seems to become at once invisible, gliding away noiselessly into the nearest cover thick enough to conceal it.

The series of eggs I have taken show practically no variation in shape or in colour and character of their markings. The ground-colour is a pale greenish grey, varying very slightly in intensity and but little in hue, though some few may be rather more decidedly green than grey, and *vice versâ*. In *all* the markings consist of very numerous freckles and small irregular blotches of pale reddish brown, distributed, as a rule, almost equally over the whole surface, but in a good many forming a very indistinct cap or ring. Besides the superior marks there are inferior or underlying ones, ranging in tint from the very palest bluish grey to a rather warm purplish grey. The eggs they most closely resemble are dark, dull, but profusely blotched eggs of *Copsychus saularis* and *Cittocincla macrura*. In shape and texture they are very much like the eggs of *Pellorneum ignotum*, just described, but the surface is rather dull; only in one clutch is the very faintest gloss perceptible.

Twenty-seven eggs average $0''\cdot81 \times 0''\cdot61$, the longest and the broadest measuring $0''\cdot88 \times 0''\cdot66$ respectively, whilst the shortest and narrowest are $0''\cdot77 \times 0''\cdot58$. The earliest eggs taken were found on the 29th of April, 1890, and the latest

on the 18th of July, 1893. The eggs are either three or four in number, occasionally only two.

15. *CORYTHOCICHLA STRIATA*. (*Oates*, op. cit. i. p. 148.)

The nest of this bird is a deep massive cup, on one side much prolonged and slightly overhanging the egg-cavity, the structure in one or two cases being almost semi-domed. The materials consist chiefly of dead leaves and fern-fronds bound together with coarse fern- and moss-roots; in one or two nests I have seen a few broad grass-blades and bamboo-leaves mixed in with the rest, and in one or two also I have seen weed-stems used for binding purposes, together with the fern-roots. The lining is merely a neat mass of dead leaves. The most striking thing about the nest is its invariable very dark colour, no materials except such as are damp and semi-rotten being used, even such few scraps of grass and bamboo-leaves as are selected being disdained unless they have acquired a dirty reddish-brown tinge. It is always, I believe, placed on, or practically on, the ground. One nest I found at the foot of a railway-survey pillar, wedged in between two of the large stones which formed its base, and concealed by rank weeds and grass. Another was taken from the decomposed mass of vegetation lying at the foot of a large tree, scanty weeds growing round it and helping to screen it from view, though its dark dirty-looking aspect agreed so well with the rotten stuff on which it rested, that additional concealment was scarcely necessary.

Other nests I have taken from amongst moss and living bright-green bushes, &c., and in all cases these have been most carefully hidden, as otherwise the dark tint of the nest, contrasting with its surroundings, would have at once attracted attention. From their position and construction the nests bear but little handling, though when actually *in situ* they seem well enough put together.

I think four is the full and general complement of eggs laid, though I have taken one clutch of three and another of two, both of which were partly incubated. On another occasion I took a nest which contained two half-fledged

young. The eggs are white, marked with small spots and freckles of pinky red and pinky brown, none very deep and none very pale; the secondary markings are of pale pinkish purple, larger than the primary markings. These, as well as the subordinate spots and blotches, are rather sparingly scattered over the whole egg, rather more numerous towards the large end than elsewhere, where also they sometimes form a ring or cap, but always indistinct and very roughly defined. In shape the eggs are broad ovals, very slightly compressed towards the smaller end, which is very blunt.

Fourteen eggs average 0".81 by 0".6. The largest egg is 0".83 by 0".62, and the smallest 0".78 by 0".59. The surface is close, fine, and hard, and shows a decided gloss.

16. *STACHYRHIS ASSIMILIS*. (*Oates*, op. cit. i. p. 163.)

There is practically nothing to note in the nidification of this little bird different from that of *S. chrysea*.

It builds a nest shaped either like a very deep cup, semi-domed or completely so, in the same way as do other birds of the genera *Stachyrhis* and *Stachyrhidopsis*. When placed under shelter sufficiently complete to entirely cover the nest the cup-shaped sort is built, and one sixth of the nests will be found of this shape, about one third of the semi-domed type, and the remaining half fully domed. The majority of the nests I have taken have been found resting either actually or very nearly on the ground, sometimes placed amongst a lot of damp close-growing plants, sometimes at the foot of some bush or at the base of a bamboo-clump. Others are placed in shrubs, generally in low bushy ones, or at some height from the ground in a bamboo-bush or clump. Wherever placed the materials seem to be always the same, viz. bamboo-leaves, either entire or in shreds. Sometimes, but by no means invariably, there is a scanty lining of fine shreds of leaves or fine grasses.

The following are the measurements of three nests, one of each type:—

Completely domed.—Height 4".8, diameter 2".9. Internal diameter about 2" by rather more than 2".5 in height. Entrance about 1".2.

A semi-domed nest, that is to say, one shaped like an egg from which half the small end has been removed.—Height over 5", diameter about 2".7 outwardly, and about 1".8 inwardly. Cavity 2" deep from the edge of the outer wall.

A cup-shaped nest measured externally 3".2 by 2".1 in diameter, and internally 2".1 in depth by 1".6 in width at the top.

The nest is generally rather well made, the bamboo-leaves being well matted together, but, from its very nature, it can stand little handling, and the bird also seems peculiarly fond of building it in some damp position, which increases its tendency to rot and come to pieces. I have found it both in thin evergreen-forest and in bamboo-jungle; in the former sort of ground it is generally placed by a pathway or on the borders of an open piece of ground.

The number of eggs laid varies greatly. I have once taken two hard-set eggs, and have also taken five eggs from a nest; probably the number is normally three or four, frequently the former number.

In shape the eggs are rather regular broad ovals, rarely somewhat pointed at the smaller end; they are very smooth and glossy, and fine and stout in texture, far stronger than the eggs of *Stachyrhidopsis*. They measure from 0".59 to 0".67 in length, and from 0".44 to 0".50 in breadth, the average of 22 eggs being 0".61 by 0".48. Oates seems much struck by the smallness of the eggs of *S. chrysea* found by Gammie, and of which he remarks:—"Their cubic contents are not half those of the average eggs of *S. nigriceps*." These eggs measured 0".63 × 0".48, whereas the average of forty eggs of this bird measured by myself is only 0".62 × 0".46. Oates does not seem to consider that the cubic contents of the two birds are probably just about in proportion to the size of their eggs.

17. *STACHYRHIDOPSIS RUFIFRONS*. (*Oates*, op. cit. i. p. 165.)

I have seen but six nests of this species; of these three were globular and three were in shape like an egg placed on

its larger end with the extremity cut off in a rather slanting direction. All the nests were made of shreds of sun-grass; two entirely, the others more or less mixed with scraps of bamboo-leaves, one being, in fact, half formed of this material. Three nests were lined with fine grasses, two with fine grasses and bamboo-roots mixed, and one with a fine fibrous-looking material, which I think consists of strips of the bark of fine bamboo-roots. In size the nests vary from about 5" to 6" in height, and are rather over 4" in diameter; the diameter of the cavity is a little over 2", the depth being more than half as much again.

The first nest was brought to me by a Cachari, together with the male bird, which he had trapped on it. On being questioned he said he found it in a clump of bamboos, standing in mixed bamboo- and bush-jungle. Two nests taken by myself were both found in thick masses of twigs on the outside of bamboo-clumps, one about four feet from the ground, the other about six. A third was taken from low down in a very dense bush little over two feet high. It was quite covered by the thick clusters of leaves and extremely well hidden, whereas those in the bamboo-clumps were rather conspicuous.

The eggs differ in no respect from those of *S. ruficeps*, except that as a whole they are slightly duller. In shape they are broad, very obtuse ovals, the shell fine and close, but glossless, and decidedly fragile. In colour they are white, sparsely speckled and spotted with yellowish and reddish brown, and with a few secondary small blotches of pale lavender. In one clutch the marks are scattered all over the egg, being rather more numerous at the larger end, to which, in all the other eggs, they are almost entirely confined, forming a fairly well-marked ring. Ten eggs average 0".64 × 0".53, and vary very little in size, the extremes in length being 0".62 and 0".65, and in breadth 0".50 and 0".55.

They are early breeders, April being the principal month for eggs. I have taken none later than May.

18. SCHENIPARUS MANDELLII. (*Oates*, op. cit. i. p. 169.)

To describe the nest of this Tit-Babbler would be merely

to repeat the description already given of that of *Corythocichla striata* (see above p. 57), it differing only in being a little smaller and proportionately more bulky and stoutly built. It also stands a good deal more rough usage, and will sometimes keep its form and shape for some months after its removal. It is placed either on or very close to the ground, the bird choosing much the same kind of ground as does *Corythocichla striata*, and appearing to be equally careful in rendering its nest invisible to prying eyes. A few of my nests have been taken in patches of grass or ekra, placed amongst the roots, almost on the ground. This sort of ground is, I believe, never used for nesting purposes by *C. striata*, bush-, tree-, and bamboo-jungle forming their haunts.

The eggs are of a type unlike those of any other genus in the family, and are very like those of *S. dubius* described in 'Nests and Eggs.' Some clutches have the ground-colour a very pale creamy brown, spotted and blotched with rather rich vandyke-brown, and with a few twisted hair-like lines and streaks of the same, but darker, sometimes almost black; there are also numerous pale cloudy blotches of pale brown, often surrounding the darker markings as with a nimbus. These marks are equally and rather profusely scattered all over the egg. The secondary spots are of pale lavender, almost entirely confined to a ring at the larger end, and a very few of dark neutral tint dotted here and there, but mostly about the ring. Other eggs are very much like these, but have a very decided greenish tinge, both in the ground-colour and in the blotches, these last also being often very dense and at the same time blurred and ill-defined. Other eggs, again, have the ground-colour white or nearly so, tinged with brown or grey; and, in some specimens, the subordinate lavender markings are equally numerous or scanty, as the case may be, over the whole surface of the egg.

The eggs are normally very regular ovals, hardly at all compressed towards the smaller end, and I have found only two clutches of the long drawn-out type, which would appear to be the common form of *S. dubius*. The texture is fine and close, and the shell strong, often showing a slight

gloss. Thirty eggs average rather under 0".83 by 0".61, varying in length between 0".78 and 0".87, and in breadth between 0".58 and 0".62.

These birds breed in deep valleys at a height of over 2000 feet, and I have also taken two nests on or near the Hungrum range at an elevation of over 5000 feet. Four is the normal complete number of eggs, but I have more than once taken two eggs hard-set. They lay in the latter end of April, and eggs may be taken well on into July, the 21st of that month being the latest I have found any.

19. *SITTIPARUS CINEREUS*. (*Oates*, op. cit. i. p. 171.)

The nest of this little Tit-Babbler is very like that of *Schaeniparus*, but is generally composed chiefly of bamboo-leaves, and is sometimes domed. Three nests taken in July 1893 were all shaped differently, and show well the different forms to be met with, as well as the materials used in construction. One was a very deep cup about 4" deep by 2".5 in diameter externally, the cavity measuring about 2".5 deep by 1".5 across at the widest part, and about 1".2 at the top, where the materials were drawn closer together by the weeds and roots used to bind them. The whole of the nest was of bamboo-leaves and fern-fronds, all dry and dark-coloured, bound together with fern-roots and weed-stems, and lined with very fine shreds of grass and a few fine fern-roots.

The second nest was like the common form, already described, of *Schaeniparus*, but the side which was prolonged was more bulky, and even more brought forward and downward, so that the nest was almost more than semi-domed. The materials employed were much the same as in the last, but no fern-roots were used in the lining. This nest measured about 5" in height by about 3" in breadth, and internally the diameter was 1".8, the entrance being 1".2, and in the narrowest part the same as the diameter lower down. The third nest was completely domed, but otherwise differed in construction from the other two merely in having no grass in the lining, this being made of fern- and moss-roots only. It

measured 5''·2 high by 2''·8 broad, the inner diameter about 1''·7.

Many nests have the dark, damp appearance of the nests of *Schœniparus*, but others are quite light-coloured, the bamboo-leaves being of the usual yellow colour, and not in a damp, rotten stage of decomposition. They are generally placed in bamboo-clumps either low down or some two or three feet from the ground in the thick bunches of twigs which grow out of the first few nodes. In 1891, however, I took two nests in evergreen-forest which were both placed in amongst the roots of a quantity of plants, though not resting actually on the ground itself. The dark colour of these nests was very noticeable. The eggs vary very much in coloration. One clutch of them in my collection has the ground-colour a very pale stone, and is marked rather profusely throughout, and especially so at the larger end, with small blotches of pale sienna-brown, there being faint indications of a cap in one egg, and, equally faint, of a ring in another. A second clutch differs in having nearly all the blotches confined to the larger end, where they form very distinct rings, and where also they are mixed with a few specks and blotches of brown, so dark as to appear almost black. A third has a white ground, with a dense ring of very dark brown and pale sienna specks and blotches, which are sparse everywhere else. Underlying the ring, but very plainly visible, are a few spots of dark neutral tint. Yet a fourth clutch differs in having no underlying marks at all and the specks of brown still darker, whilst the sienna ones are almost wanting. In shape most of the eggs are rather long ovals, somewhat compressed, though blunt, towards the smaller end; but others, again, are very broad, not at all compressed, and one clutch is both broad and also pointed at the small end.

Ten eggs vary in length between 0''·68 and 0''·73, and in breadth between 0''·49 × 0''·57. The average of the same number is under 0''·71 by over 0''·52. I have taken eggs hard-set as late as the 25th of July, and a single fresh one as late as the 13th of the same month; on the other hand, I

have taken eggs very hard-set as early as the 29th of April. This is a rare bird, except in one or two favoured localities; in these it is very common. It does not appear to breed below 2500 feet, and ascends for this purpose up to 5000 feet.

[To be continued.]

V.—*Notes on the Birds of the Central Pyrenees.*

By H. M. WALLIS.

THE following observations were made in May and June 1894, in the district east of Pau and Eaux-Chaudes and west of Luchon and Bagnères-de-Bigorre. A week was spent on the Spanish side of the range in the glens at the foot of Pic Perdu, and the rest of the time was passed on the French frontier. I carried no gun.

1. *TURDUS MUSICUS*, Linn.

I heard the Song-Thrush at Eaux-Bonnes, and again in the Valle de Ara* on the Spanish side, where in the late afternoons it sang cheerily among the pine-woods.

2. *TURDUS MERULA*, Linn.

The Blackbird was noticeable at Eaux-Bonnes and as far up the Gave-de-Pau as St. Sauveur. At Argelès-de-Bigorre I found a nest with five eggs.

3. *TURDUS TORQUATUS*, Linn.

I met with Ring-Ouzels at the edge of the timber-line above Gavarnie. Young birds were on the wing by June 16th.

4. *TURDUS PILARIS*, Linn.

We came upon a single Fieldfare on June 6th in a copse of stunted beeches near the edge of the timber-line above Gavarnie, *i. e.* about 5700 feet above sea-level.

The bird flew over my companion's head, uttering its alarm-note—a call with which he had become fairly familiar during a six weeks' tour in Norway in the nesting-season. He called to me and began hunting for a nest, almost immediately finding one in the fork of a gnarled beech about 4 feet from

* Also known as Valle de Ordesa and Val d'Arazas.—H. M. W.